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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/734,953

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Bruce M. Schena

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EXAMINER

BRIER, JEFFERY A

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 01/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/734,953

Applicant(s)

SCHENA ET AL.

Examiner

Jeffery A. Brier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-38, 40-48 and 50-60 is/are rejected.
- 7) ☒ Claim(s) 39 and 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The preliminary amendment to the Cross Reference to Related Applications located on page 2 of applicants continuation transmittal form has been entered.
2. The preliminary amendment consisting of seven pages has been entered in part. On page 2 of that preliminary amendment applicant requested to:
 - amend page 1, this amendment was entered previously in the continuation transmittal from;
 - amend pages 12 and 19, these two amendments have been entered;
 - amend page 13 at 2 locations, these amendments have not been entered because it is impossible for the PTO to enter the requested language at the requested location due to space limitations; and
 - applicant requested to have claims 1-47 cancelled and to add claims 47-72, however only claims 1-34 were in the file previous to the preliminary amendment (see application pages 35-40), thus, claims 47-72 have been renumbered as claims 35-60.

Drawings

3. The corrected or substitute drawings were received on 03/26/01. These drawings are approved.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 35-38, 40-48, and 50-54 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 20, 21, and 23 of U.S. Patent No. 5,825,308. Although the conflicting claims are not identical, they are not patentably distinct from each other because the mode selector button of the patented claims toggles the type of force sensation that the user will feel in response to the user interacting with the graphical environment with the force feedback device controlled cursor. The following table correlates application claims and patented claims.

Application claim no.	patent claim no.
35, 36, and 40	3
45, 46, and 50	20
37 and 38	6
47 and 48	23
41-44	4
51-54	21

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 35-38, 40, 41, 45-48, 50, 51, and 55-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobus, U.S. Patent No. 5,389,865, in view of Salcudean, U.S. Patent No. 5,790,108.

Jacobus teaches a force feedback user interface device that allows a user to interact with a virtual environment, column 4 line 26. Jacobus goes into great detail about how the user interacts with a virtual tactile environment, column 2 line 58 to column 3 line 14 and column 4 line 57. Jacobus does not clearly state that the virtual environment includes a graphical environment but the word virtual environment suggests graphical because a virtual environment includes visual (graphical), tactile and other senses. Jacobus teaches functionality buttons. Jacobus also does not mention cursors interacting with graphical objects or regions. Jacobus at column 7 lines 1-24 describes the functionality buttons (switches 54) as follows:

Included as an integral part of the hand grip assembly are three switches 54, a trigger 56 which works through an L-shaped lever to push a Linear Rheostat or an LVDT 192, and a palm grip 58 which works through depressing a limit switch 194. The switches 54 allow the operator to select software driver programmed modes of operation such as position, velocity, or force control, perform scaling between the hand grip motion and motion of the simulation, provide selection between one or more

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virtual reality force fields and/or selectively activate or deactivate particular joints of the hand controller.

The trigger grip provides a continuous change in resistive value as a function of depression or displacement, and can thus be used to actuate an end effector or other continuously controlled virtual mechanism.

The palm grip can be sensed as either pressed or not pressed, indicating whether the user has a firm grip of the handle assembly or not. Normally the software driver uses this switch to control hand controller safety functions--if it is not firmly pressed all active power to the hand controller actuators is interrupted. However, the switch can be sensed and decoded in the software driver as well.

Salcudean teaches a force feedback user interface device that allows a user to interact with a graphical user interface by moving a cursor or pointer over the displayed graphical user interface image, column 8 line 66 to column 10 line 3.

An analysis of the claims and the prior art follows:

Claim 35:

Jacobus teaches a force feedback interface device (figures 5a-5c, manipulator 50, see column 5 lines 15-46) in communication with a host computer (figure 4, computer 46), the force feedback interface device comprising:

at least one sensor (column 4 lines 58-63) that detects a motion or position of a manipulandum (stick or handle 52, column 5 line 26) of said force feedback interface device when manipulated by a user,

at least one actuator (DC servo motors 60, column 5 line 30) operative to output forces to a user of said force feedback interface device; and

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a force functionality button (54, column 7 lines 5-12) provided on said force feedback interface device and manipulatable by said user, wherein said force functionality button toggles the output of a force feedback sensation by said actuator (selecting one type of force instead of another type of force "toggles" the type of force output by the handle onto the user),

said toggling based on said manipulation of said force functionality button by said user (as the user selects one force sensation selected by depressing one button 54 in favor of another button representing a different force sensation, toggling of the force sensations has occurred).

Jacobus does not teach wherein a location of a cursor displayed by said host computer is responsive to said manipulation of said manipulandum by said user (lines 4-5); and Jacobus does not teach toggling the force feedback sensation when said cursor encounters a designated graphical object or region upon a graphical display of said host computer (lines 10-11) .

Salcudean teaches a force feedback user interface device that allows the user to control a displayed cursor illustrated in figure 12 (column 9 line 4 to column 10 line 3) and that gives the user tactile feedback as the cursor or pointer is moved over the graphical image.

It would have been obvious to one of ordinary skill in the art the time of applicants invention to use the forces feedback device of Jacobus to control a cursor in a graphical display as taught to be old and well known by Salcudean because Jacobus

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suggests this by allowing a user to interact with a virtual environment at column 4 lines 25-29 of Jacobus.

Claim 36:

Jacobus teaches a force feedback interface device as recited in claim 35 wherein said force sensation is applied by said actuator when said force functionality button is depressed by said user.

Claim 37:

Salcudean teaches a force feedback interface device as recited in claim 36 wherein said force feedback sensation is associated with a cursor crossing a window border at column 9 lines 60-63. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross a window boundary and to give the user appropriate force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

Claim 38

Salcudean teaches a force feedback interface device as recited in claim 37 wherein said force sensation includes a force that resists a motion of said cursor through said window border at column 9 lines 60-63. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback

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device of Jacobus to control a cursor to cross a window boundary and to give the user resistive force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

Claim 40:

Jacobus teaches a force feedback interface device as recited in claim 35 wherein said actuator is controlled by a local processor (controller 44, column 4 lines 56-68) in response to signals received from said host computer.

Claim 41:

Salcudean teaches a force feedback interface device as recited in claim 36 wherein said force feedback sensation is associated with a cursor crossing a border of an icon at column 9 lines 49-52 and at lines 57-59. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross an icon border and to give the user appropriate force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

Claim 45 is the method claim version of claim 35 and is rejected for the same reasons that claim 35 is rejected.

Claims 46, 47, 48, 50 and 51 correspond to claims 36, 37, 38, 40 and 41 and are rejected for the same reasons that claims 36, 37, 38, 40 and 41 are rejected.

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Claim 55 is similar to claim 35 with the exception that this claim claims both first and second force functionality buttons. Jacobus teaches this because at column 7 line 2 Jacobus makes reference to three switches 54 and at column 7 lines 5-10 more than two force settings selectable.

Claim 56:

Salcudean teaches a force feedback interface device as recited in claim 55 wherein said first force functionality mode is a pressure scrolling mode, wherein a spring force is output on said manipulandum opposing the movement of said cursor through a border of said designated graphical object or region at column 9 lines 60-63 where forces at a window's border is described, and wherein a rate of scrolling of an object is controlled by an amount of said movement of said cursor at column 9 lines 30-43 where the thumb scroll button is considered to be the cursor since the cursor moves the thumb scroll button and the faster the cursor is moved the faster the scrolling. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross a border such as window boundary and to give the user resistive force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34) and because Jacobus is for virtual environments.

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Claim 57:

Salcudean teaches a force feedback interface device as recited in claim 55 wherein said first force functionality mode is a pressure clicking mode, wherein a spring force is output on said manipulandum opposing the movement of said cursor through a border of said designated graphical object or region, and wherein said designated graphical object or region is selected by said cursor when said cursor moves into a predetermined threshold distance into said designated graphical object or region at column 9 lines 49-52. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross an icon border and to give the user appropriate force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

Claim 58:

This claim is a combination of claims 56 and 57. It is rejected for the same reason given for claim 56 and 57 and additionally because it would have been obvious to one of ordinary skill in the art at the time of applicants invention because Salcudean teaches the first and second claim functions together.

Claim 59:

Salcudean teaches a force feedback interface device as recited in claim 56 wherein said designated graphical object or region is a window at column 9 lines 60-63.

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It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross a window boundary and to give the user resistive force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

Claim 60:

Salcudean teaches a force feedback interface device as recited in claim 56 wherein said designated graphical object or region is an icon at column 9 lines 49-52. It would have been obvious to one of ordinary skill in the art at the time of applicants invention to use the force feedback device of Jacobus to control a cursor to cross an icon border and to give the user appropriate force sensations because Jacobus suggest this by having edge/position limits (Jacobus-column 11 lines 24-34).

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Keyson, U.S. Patent No. 6,046,726 teaches various forces to be generated on the user interface in a virtual workspace.

Osborne, U.S. Patent No. 6,005,551; Marcus, U.S. Patent No. 6,004,134; Kubica et al., U.S. Patent No. 5,990,869; and Chen et al., U.S. Patent No. 5,709,219 all teach force feedback user interface devices.

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Allowable Subject Matter

9. Claims 39, 42-44, 49, 52-54, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if a proper terminal disclaimer is filed. The prior art does not teach these claims. The indexing feature of claims 39 and 49 is defined by applicants specification at page 12 line 33 to page 13 line 12.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A. Brier whose telephone number is (703) 305-4723. The examiner can normally be reached on M-F from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (703) 305-4713).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

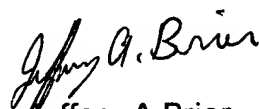
or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.


Jeffery A Brier
Primary Examiner
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